



- **Talk: John Box – ‘Can Trees Save the Planet?’ Another thought provoking evening I’m sure, John always gives us food for thought. Tuesday 12th November 7.30pm Abbeygate Hall. Shropshire Wildlife Trust (as last month).**

Chair’s Chat,

I need to restrict my piece this month as John Tuer has done a brilliant job reporting the October talk by Peter Thomas, so there is a little less space to add anything else! Peter’s talk was truly fascinating, quite how John managed to listen, inwardly digest and take notes I am not sure.

Thank you John for such a comprehensive report on the talk.

Our next talk is by John Box – ‘Can Trees Save the Planet?’ Another thought provoking evening I’m sure, John always gives us food for thought.

Tuesday 12th November 7.30pm in Abbeygate Hall. Shropshire Wildlife Trust (as last month).

I look forward to seeing you there.

Advance notice – Tuesday 10th December, our Christmas Social with seasonal refreshments and a couple of short quizzes – all for fun and a chance to chat. Hope you can make it. *Julie Kaye*

Andy Gordon writes-

I was intrigued to see the report by Angela and Roger Hughes of their visit to Shetland in the recent newsletter as by a strange coincidence I was also in Shetland at almost the same time. This was my second visit there the first being on a family visit in 1949! In those days I was as keen on birds as I now am on trees and to this day I am amazed that I managed to persuade my parents to walk to the Noup of Nosswhere we could see Puffins. This involved a considerable journey.

Andy Gordon

Why are trees so important? From bomb protection and Tree Intelligence to Carbon Storage, Cardboard Boxes and Wellbeing

What an excellent talk this was, so wide-ranging and so well illustrated. We had a good audience for Peter Thomas who has been to talk to us in the past and, I know we shall see him again in the future. Before even starting to answer the huge title

he had set himself, Peter began by giving us lots of information about trees in general, just the kind of information that we might find useful in a quiz. So note it down if you will for the next time you go to a pub quiz!

How many trees are there in the world? 3.04 trillion. I planted a few disease-resistant elms in Much Wenlock a few weeks ago so it's now at least 3.04 trillion and 3! But I suspect 3 trillion is the figure to remember.

How much do they weigh? Answer: 1,100 gigatonnes. I don't suppose we'd ever come across the prefix "giga-" before the Internet!

What proportion of life on earth is made up of plants? Answer: 82%.

How much of the world's biomass is the result of tree growth? Answer: 60%.

The height of Big Ben is 95m, so what might be the height of the tallest tree in the world (a Coast Redwood)? Answer: 115.7m

Which species of tree is the largest in the world by volume? Answer: The Sierra Redwood or Wellingtonia with a height of 83.3m, a width at base of 11m and a weight of 1,400 tonnes. For comparison the average weight of a mature tree is about 5 tonnes.

As far as biggest trees in the world are concerned, there is an Aspen in the state of Utah that covers 106 acres/43hectares. It has 47,000 stems. They are all linked together underground so do you call it one tree? Or many? All the stems have the same DNA, so it must be the same tree.

What about the old and very ancient trees, such as the Marton Oak at 1,200 years old, the Ankerwycke Yew at 2,500 years old, the Fortingall Yew at probably 5,000 years old (there's lots of uncertainty here) or the Bristlecone Pine in America also at 5,000 years old.

This prompted me to look back into my copy of Pigott's book "Lime trees and Basswoods" where he tells us that he had found an old lime tree in Hessen, Germany where an inscribed stone had its planting date as 760... "giving it an age now", he says "of 1,240 years, which is not impossible." His book was published in 2012.

Peter told us about trees growing new limbs to replace old. If the limbs are lost naturally, he said, the tree has a better ability to regrow new limbs than if the old limb has been removed by chain-saw. As a result, the idea of producing "coronet-cuts", in an attempt to replicate the jagged end of a fallen limb, is often not successful in producing re-growth.

And this is the place where Peter moved into the points he wanted to make about why trees are so important and you can see why all the aforementioned had to be related first.

And there was so much to tell us here.

Concerning street trees; there is an increased tendency to walk to work or to be involved in recreational activities where these take place among trees and the lowest income group benefits most from having green spaces near their homes.

Peter mentioned that if you have a thick hedge of a species such as Cherry Laurel or *Thuja* and there is a bomb blast on one side of the hedge, there is a 62% reduction in explosion pressure up to half a metre on the other side of the hedge. What surprising things tree research gets up to these days!

Tree Intelligence was Peter's next topic and this was a long one because so much research has been undertaken into this subject in recent years. Read Peter Wohlleben's book "The Hidden Life of Trees" or Suzanne Simard's book "Finding the Mother Tree – Uncovering the wisdom and intelligence of the forest". Trees can detect what is happening in their environments and react to it. Take one example: the stronger the wind, the shorter the tree. Peter told us the tree makes the decision to stay short. It can detect how much wind is blowing on it in the winter so that the following spring it will "remember" this and will not grow as tall.

Here's another one: trees have pathogen recognition receptors meaning that they have the facility to recognise when insect or fungal pathogens are threatening. Many insects have a "crusty shell" (my words) over their soft parts. This "shell" is made of chitin. Some trees recognise chitin when it falls on their leaf cells so it knows that something producing chitin is nearby. So if a pathogen – be it insect or fungal – can be recognised before it reaches the tree, the tree can prepare itself by operating its defences. Peter told us that the tree can release reactive oxygen that strengthens its cell walls and triggers its defence genes. Trees can also produce Salicylic Acid which can be shared with other trees so that they, too, can be aware of the impending presence of pathogens.

This information can be shared with other trees by air or by their roots. By roots through the "Wood Wide Web" (a term introduced by Suzanne Simard) as water and sugars pass this way through the "superhighways" of their conjoining roots. Simard found that an old "hub" tree in Canada (a Douglas Fir) was linked to 250 other trees.

Peter spoke of these trees being altruistic. They co-operate as a harmonious unit but, in reality, "it's an uneasy truce that is in the best interest of the partners".

I'm sure that many of you have heard of "mycorrhizae", which can be purchased in nurseries often under the name of "Friendly Fungus". Stick a spoonful in the soil as you plant a tree and this fungus will grow to link up with other fungi underground. Water and nutrients can then pass between the new and old trees (with which it is often already attached) to their mutual benefit. Peter told us that some trees in fertile soil do not need mycorrhizae. So it's not always necessary.

Many people are very sceptical of this kind of information but as tree researches proceed, particularly in this area of research, more and more information is coming to light to show that this is really what is happening.

Then onto Tree Planting and Carbon Change: Peter looked into carbon sequestration first and told us that, in the U.K., we have carbon stored in trees above ground to the extent of 674 million tonnes (2020 figures). Below ground in roots, there are 242 million tonnes stored and in the soil, carbon has been captured to the extent of 2,761 million tonnes. Now all that is something that shouldn't be disrupted. As Peter continued, there is much carbon loss on planting. If trees have been removed first, then new trees take time to grow. In addition, soil carbon is disturbed. He gave us the figure of it taking 40 years for the carbon in trees to recover where trees are planted on wet grassland or moorland.

So we certainly do need to plant more trees but in areas where the soil has less carbon and we do need to protect forests. All of which to preserve the carbon we have stored.

In the short term, Peter told us that "tree planting was not a magic carbon dioxide sponge". He gave us more useful figures: Trees and forests soak up 12-15% of our carbon emissions. So carbon uptake is small in relation to how much is actually emitted by industry, traffic, etc.. That makes carbon already stored in trees and forests hugely important. Reducing deforestation is critical, he said, "Don't fell trees." On the point of using trees for the production of card and paper, we actually import 82% of timber (2020 figures), half of which is brought into the country as pulp and paper. 2021 figures tell us that 71% of paper and card is recycled.

So it's better to fell plantations, if we have to fell trees, rather than pristine forests. Protect old trees as much as we can. Peter's message came across very strongly on this point.

On the subject of well-being, views through hospital windows, may influence recovery from surgery. Research has found that patients have a less negative attitude, recover quicker, use fewer painkillers and have fewer complications.

And here's something we have heard before, from Bob Watson in his wonderful talk that included forest bathing. Peter reinforced Bob's argument about the benefits of "forest air bathing and forest therapy". Peter said, stand in a forest, stand and breath, stand and look. This is good for one both psychologically and physiologically. A lunchtime walk in a woodland will enable one to sleep better.

What an all-embracing talk this was, full of fascinating details and based on known research, and given with so much enthusiasm for his subject. We thank Peter for coming to us from Keele University and although he said that he is now retiring and will stop giving talks, he promised that we were not included in that. He will come again. We look forward to that very much. *John Tuer*